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MINE CLOSURE PLAN
OF
PATHAKHERA MINE NO -II UG
(PATHAKHERA AREA)

WESTERN COALFIELDS LTD.

(JOB No. 4091499)

AUGUST 2013
(UPDATED)

CMPDI

REGIONAL INSTITUTE-IV, KASTURBA NAGAR,
JARIPATKA, NAGPUR, PIN – 440 014

AN ISO 9001:2000 COMPANY
CERT. NO.: C I /8656

PATHARKHERA II UG

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SUBMISSION

Mine Closure Plan for Pathakhera-II UGP is prepared vide WCL work order No. WCL/ENV/HQ/16-C/146 dt 21.04.2011.

The report is prepared as per the guidelines issued from Ministry of Coal, Government of India vide No. 55011-01-2009-CPAM dt 7.01.2013.

CHAPTER-I
INTRODUCTION

1.1.0 About the Mine

Pathakhera Mine No-2 is situated in Pathakhera Area WCL about 16Km away from Ghoradongri Railway station on Delhi Chennai route, the mine was opened under the ownership of NCDC in Jan, 1970. There were 3 seams Upper workable seam (1.7m) Lower Workable seam (3.0 to 3.5m) & Bagdona seam (1.2 to 1.7m) having gradient 1 in 10, direction N11 E

The mine has been closed since 13.06.2011. The total project area is 281.387 ha. The financial provision for Mine Closure Plan of this mine at present works out to around Rs 354.99 lakhs (Based on April 2012 WPI)

1.1.1 Name of mine Owner/company

Project : Pathakhera Sub Area,(Under ground)
Area : Pathakhera Area.
Company : Western Coal Fields Limited.
Mine owner : Director Technical (P&P) WCL.

1.1.2 Address for Communication with PIN and Phone nos.

Project : Pathakhera Area.
P.O : Pathakhera.
Dist : Betul.
State : Madhya Pradesh.
Pin : 460449
Phone : 271433

1.1.3 Location of mine

Pathakhera Sub Area
Area : Pathakhera Area WCL
Longitude : 22-07'-21" to22-08'-15"N
Latitude : 78-09'-07" to 78-10'-54"E

1.1.4 Date of Start: -

Date of opening-Jan/1970.

1.1.5 Total Project Area of the mine : 281.387 ha.

1.1.6 Communication

Ghoradongri Railway station on Delhi-Chennai Rout is well connected by road & 16 Km from the Pathakhera Area. This Coal fields is also connected by road from Nagpur, Bhopal cities by NH 69. This field is 24 Kms away from NH 69.

1.1.7 Topography of the area

Topography of the area is gently undulating with general slope towards North West direction . Max & Minimum MSL of the survey is 450m to 540m. The small streams & nullahs within the area are generally dry except during the monsoon.

1.2 Reasons for Closure

The reason of closure of the mine is exhaustion of the extractable reserve in all three coal seams.

1.3 Need of mine closure planning

1.3.1 Mining activities leave long lasting impacts on the landscape, ecology and on local inhabitants. These activities disturb the delicate environmental and social equilibrium that exists in its area of influence. Hence, it becomes imperative on part of the mine operator to restore the equilibrium in the mine affected area that existed in the pre-mining period. Thus, any mining venture must have adequate closure plan, aimed at rehabilitation of disturbed area, which should be acceptable to local community as well as regulatory authority.

1.3.2 Mine closure encompasses rehabilitation process designed to restore physical, chemical and biological quality disturbed by the mining activities. Mine closure is not just something that happens at the end of a mine's life rather mine closure is an ongoing series of decisions and activities beginning in the pre-mining stage of mine and ending with a sustainable site that can be returned to the community.

1.3.3 Thus, a mine closure plan needs to define the liabilities, responsibilities and authorities of the different agencies like the mine management, other regulatory bodies, Central and State Governments after mine closure. Various objectives of the advance mine closure planning are as follows

a. To allow productive and sustainable after-use of the site, which is acceptable to the mine owner and the regulatory authority.

b. To protect public health and safety.

c.To eliminate environmental damage and thereby encourage environmental sustainability.

d.To minimize adverse socio-economic impacts of mining activities.

e.To protect the flora and fauna of the area affected by the mining.

f. Effective use of the assets created in course of mining.

1.3.4 Primarily, the mine closure activities are planned in two stages. The initial plan identifies the activities required to be executed as the mining activities progress after the inception of the Project. These activities may undergo subtle changes depending upon the actual site condition during implementation.

1.4 Mine closure planning strategy in respect of-PK-2UG Mine Project based on existing set of parameters.

Mine closure activities will continue as envisaged in the various approvals, permissions, consents etc.for which adequate financial provision is available.

1.5 Statutory Obligations

All the statutory obligation on the part of management have been complied & regular reports have been submitted to respective authorities.

CHAPTER-II
MINE DESCRIPTION

2.0 Geology in brief

The rocks of the Lower Gondwana formations comprising of sandstones, shales and coal seams exist in Pathakhera coalfield. The coal deposits belong to Barakar Measures, The total thickness of Barakar is composed predominantly of sandstones with shales and coal seams, Intrusives in the form of Dolerite dykes have affected the area. Pathakhera coal fields constitutes western part of the southern limit of the Satpura basin. While the metamorphics and Talchir occupy the south western part of the coalfield, the Barakar rocks are exposed in this central part and motur occupy the major part of the coalfield, in the north. The dip of the formation are generally towards north while local anticlinal and synclinal flextures are not uncommon. The southern part of the coalfield is characterized by southerly dip indicating an anticlinal warp axis of which is defined by a major EW trending fault. Sarni mine is located in the southern limit of the anticline.

The area under present assessment is covered by soil with a few exposures of motur sandstone constituting high ground.

The structural pattern of the coalfield has been deciphered on the basis of subsurface data. The trend of coal seams is broadly in east west direction with northerly dip of 1 in 7 to 1 in 8. However , the strike gradually changes to NE-SW in the western part.

An anticlinal flexture is prominently exhibited in the western part of the coalfield. The anticlinal flexture is characterized by numerous transverse faults of different magnitude. There are nine faults occurring in the mine boundary. The area is traversed by a number of EW trending dolerite dykes.

2.2 Brief description of Mining System

Presently there are no any mining system because mine has been closed due to exhaustion of extractable coal reserves.

2.2 Seam-wise Mine Details

Table-1 Mine entry details

Inc No	Depth/Length	Dia/Sec	Purpose	Usage
Inc-3	56 M	4.20mx300m	Intake	Material
Ins-4	61M	420mx300m	Intake	Belt
Air shaft	20.58M	4.80	Return	Air shaft

Table-2… Performance of mine for last 5 years

	2007-08	2008-09	2009-10	2010-2011	2011-2012
Production(t)	2,60,009	2,82,727	3,50,100	3,52,924	30,552
OMS(t)	1.53	1.78	2.06	2.36	1.17

2.3 Mine boundary details

North : Tawa mine No-1 & 15mtr up throw fault.

Sout : Sarni U/G mine.

East : Tawa Reservoir

West : Pathakhera mine No-1 U/G(abandoned)

2.4 Surface Water bodies and their status

There is no prominent water body on the surface.

2.5 Maximum depth of the UG workings

The max. depth of u.g. working of last depillared panel “Man Dist of LWS” is 185m.

2.6 Coal processing/beneficiation operation

There is no CHP at the mine but entire coal from this mine was being dispatched through CHP of Pathakhera - I mine to Satpura Thermal Power Station, Sarni.

CHAPTER-III

CLOSURE PLAN AND RELATED ACTIVITES

3.1 Mined out Land & proposed final land use

As it was an U/G mine so no land reclamation or surface /land management is required as no subsidence was observed during the working of the mine. Few cracks whenever observed were filled up during operation of the mine itself.

3.1.1 Management of mined out area

A) As mine is u.g. mine & coal was extracted by development & depillaring with caving method in all three seam. Some cracks were developed over the depillared panel which was filled up by materials and settled.

B) As regards the underground void which was remain at the time of closure of the mine, they will get filled gradually with water. The necessary precautions for the safety of the neighboring mine would be taken care of against water. Further, the water filled in UG voids will help in maintaining the water level in the nearby Area.

3.1.2 Details of past subsidence and reclamation of Subsided land

History of subsidence in the Pathakhera Area is almost negligible so there is no need of management of subsided area of the mine.

3.2 Water Regime management

3.2.1 Drainage pattern of the area (pre and post closure)

The area of the mine is fully covered by hills, there is no big nallah on surface. All rain water is flowing & get accumulated at Tawa dam situated at East-West direction outside boundary of the mine.

Existing drainage pattern

Hilly area of the mine is gently sloped towards North-East direction providing natural drainage to the rain water.

Post closure drainage pattern

During the course of mining of worked/depillared seam, the general drainage pattern is not disturbed. The natural drainage profile of entire leasehold area would be kept in a manner, which will facilitate the normal run-off.

3.2.2 Mine water discharge details

Existing Mine water discharge details

There is no mine discharge as mine is completely sealed off.

Post closure Mine water discharge

There will be no mine discharge as mine is completely sealed off.

3.2.3 Water Quality Monitoring

Present Status of Water Quantity

Because of the nature of strata available in the leasehold area, any case of contamination of ground water from leaching or any case of acid mine drainage have not been detected so far.

Test results of the samples collected from the surface water bodies have shown that the water quality of surface water bodies was matching with the standards prescribed by MOEF.

Results of various quality checks have been furnished below in tabular format.

DRINKING WATER QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2012
NAME OF THE AREA : PATHAKHERA Q.E. : JUN.
NAME OF THE PROJECT : PATHAKHERA- II UG DATE : 21.05.12

Sl. No.	Parameter	Analysis Result		Standard (IS 10500 : 1991)	
		Drinking water from GM Office	Drinking water from Guest House	Desirable limit	*Permissible limit in the absence of alternate source*
1.	Colour (Hazen)	2	3	5	*25*
2.	Odour	Unobject.	Unobject.	Unobject.	-
3.	Taste	Agreeable	Agreeable	Agreeable	-
4.	Turbidity (NTU)	3	4	5	*10*
5.	pH value	7.28	7.27	6.5 to 8.5	*No relaxation*
6.	Total Hardness(as $CaCO_3$) (mg/l)	98	96	300	*600*
7.	Iron (mg/l)	BDL	BDL	0.3	*1.0*
8.	Chlorides (mg/l)	14	18	250	*1000*
9.	Residual, Free Chlorine (mg/l)	BDL	BDL	0.2	-
10.	Dissolved Solids (mg/l)	144	146	500	*2000*
11.	Calcium (mg/l)	32	30	75	*200*
12.	Copper (mg/l)	BDL	BDL	0.05	*1.5*
13.	Manganese (mg/l)	0.021	0.018	0.1	*0.3*
14.	Sulphate (mg/l)	17	20	200	*400*
15.	Nitrate (mg/l)	1.76	2.64	45	*100*
16.	Fluoride (mg/l)	0.62	0.79	1.0	*1.5*

17.	Selenium (mg/l)	BDL	BDL	0.01	*No relaxation*
18.	Arsenic (mg/l)	BDL	BDL	0.05	*No relaxation*
19.	Lead (mg/l)	BDL	BDL	0.05	*No relaxation*
20.	Cadmium (mg/l)	BDL	BDL	0.01	*No relaxation*
21.	Zinc (mg/l)	0.038	0.029	5	*15*
22.	Chromium (Cr^{6+}) (mg/l)	BDL	BDL	0.05	*No relaxation*
23.	Alkalinity (mg/l)	88	86	200	*600*
24.	Aluminium (mg/l)	BDL	BDL	0.03	*0.2*
25.	Boron (mg/l)	BDL	BDL	1	*5*
26.	Phenolic Compounds (mg/l)	BDL	BDL	0.001	*0.002*
27.	Coliform (MPN / 100 ml)	NIL	NIL	Shall be absent	-

(BDL – Below Detectable Limit)

Ground water monitoring data from dugwells in buffer zone of Pathakhera-II UG mine

Well No.	Name of village	Well location	Height of measuring point (m agl)	Total depth (m)	Well dia (m)	DEPTH TO WATER TABLE, m (bmp)		
						May' 10	Aug' 10	Nov' 10
PK2	BAGDONA	North side of Rly line & near Rly culvert at about 60 m	0.50	16.00	3.75	14.85	2.65	3.90
PK3	PATHAKHERA	On N.side Sarni road near Radhakrihna Temple	1.00	6.00	1.40	7.30	1.95	2.50
PK4	SHOBHAPUR	Well in field and N. of village on E. side of Gopalpur-Chapna road	0.65	10.00	5.30	6.75	1.25	4.75
PK5	BHOGAIKHAPA	N. side of village road in compund of owners house	0.55	15.90	3.55	14.75	11.75	12.75
PK6	GHOGRI	On S. side of Chopna road at a distnace of 50 m and near Hanuman temple	0.60	8.05	3.40	6.30	3.30	3.90
PK7	BADALPUR	About 100m south of 0 km stone on Chopna road	0.40	11.00	4.25	9.90	8.50	4.90
PK10	CHOPNA-3	E. side of Chopna road about 50 m & back side of owners house	0.45	10.10	4.15	7.15	4.05	3.85
PK10A	CHOPNA-1	W end of village and south of main road	0.65	8.20	5.35	5.65	0.95	2.55
PK11	GHOGRI AMDHANA	Well near owners house in filed	0.70	9.90	5.50	6.15	2.25	5.85
PK11A	PAHARPUR	E side of village rd.and back side of owners's house	0.85	12.00	4.20	8.70	2.65	4.00
PK12	DABHADHANA	On E side village road and about 200 m N. of road junction of Shobhapur & Chopna-Shaktigarh road	0.30	11.00	3.75	9.60	6.40	6.90
PK13	DEHRI AMDHANA	E. side of Gopalpur road & back side of opwner's house.	GL	6.20	3.00	4.90	3.15	3.10
PK14	GOPALPUR	E. side of Village road in the owners house complex, NA(Road under construction)	0.70	9.70	2.30	Dry	2.90	4.20
PK15	SHAKTIGARH	South side of road & back side of owners house	0.25	6.60	1.95	6.05	1.45	3.95
PK15A	SHAKTIGARH	In northern part of village	0.45	6.75	1.50	4.45	0.35	2.75
PK16	GANDHIGRAM	S. side of road near Primary School	0.80	8.00	3.05	6.20	2.30	2.50
PK17	GHOGRI	Back side of owners house & S. of village road	0.90	8.55	3.40	8.05	5.20	6.80
PK18	DHASER	In western part of village on North side of road	0.50	12.80	3.00	7.90	NA	3.80

PK19	BAGDONA	East of village and about 300 m E. of CUCL community Hall	GL	7.60	4.90	5.00	1.50	2.35
PK20	BAGDONA	On E. side of chattarpur road & about 1 1/2 km from Bagdona Main road	0.40	15.30	4.70	Dry	10.30	10.00
PK21	CHHATARPUR (mine-1)	On W. side of Chhattarpur road near the gate of SAM office &Chatarpur mine No 1	0.55	11.15	2.10	Almost dry	4.90	4.45
PK22	DHAMKADHANA	West of village & 30m N of road to village in the field.	1.00	10.70	5.00	7.90	2.50	3.10
PK23	CHHATARPUR	Near owners house & S. of road in village	1.10	14.35	3.25	14.15	13.10	12.00
PK24	UMRI	Northern side of village near owners house	GL	10.40	4.25	9.90	8.30	8.70
PK25	KERIYA	Back side of oweners house	1.00	15.70	3.80	15.10	14.25	12.90
PK26	CHORDONGRI	Back side of owners house	0.60	13.20	3.15	Dry	NA	12.05
PK28	PHULBARIYA	Back side of owner's house near Sangini Mahila Mandal Centre	0.65	9.50	3.40	5.75	2.25	2.50
PK29	KATANGI	In front of house of Shersing in northern part of village	0.40	9.10	2.15	8.10	5.15	6.60
PK36	SHOBHAPUR COLONY	Near Shivani Harbal and Pintoo Kirana store.	0.50	9.00	1.60	Almost dry	3.50	3.55
PK37	CHORPANDRA	S of village road, and back side of owner's house	0.70	14.85	4.75	Almost dry	2.40	5.00
PK43	KOLGAON	Well in back side of owner's house near ration shop	0.60	7.20	2.45	6.10	NA	NA
		D- Domestic, I - Irrigation,						

Practice after the closure

The above practice of monitoring of quality of water would be continued for a period 3 years after the cessation of mining activities. If required, corrective action/steps would be taken to mitigate any adverse effect on local water regime. The responsibility of maintaining the quality of drinking water will be entrusted on the State Authorities after 3 years of mine closure.

3.3 Air quality management

The quality of air will be monitored on regular basis by drawing samples from the various residential and non-residential areas of the project. The test results are compared with the standards prescribed by the MOEF & CPCB.

The test results of recent sampling area as under:

AIR QUALITY MONITORING DATA

NAME OF THE COMPANY : WCL YEAR : 2012
NAME OF THE AREA : PATHAKHERA Q.E. : JUN.
NAME OF THE PROJECT : PATHAKHERA-II UG

1. CGM Office (Near entrance gate room) : P_KP_2UA-1

(24 hourly values in µg/m³)

Month	Dates of Sampling			Parameters			
	From	-	To	SPM	PM-10	NO_X	SO_2
MAY. 2012	05.05.12	-	06.05.12	342	124	5	2
MAY. 2012	21.05.12	-	22.05.12	397	156	8	6
JUN. 2012	09.06.12	-	10.06.12	150	76	4	2
JUN. 2012	19.06.12	-	20.06.12	92	46	2	2
TLV as per Env.(Protection) Amendment Rule 2000				**600**	**300**	**120**	**120**

2. SAM Office : P_KP_2UA-2

(24 hourly values in µg/m³)

Month	Dates of Sampling			Parameters			
	From	-	To	SPM	PM-10	NO_X	SO_2
APR. 2012	19.04.12	-	20.04.12	215	112	5	2
JUN. 2012	19.06.12	-	20.06.12	57	43	2	1
TLV as per Env.(Protection) Amendment Rule 2000				**600**	**300**	**120**	**120**

3. Dy. CME Office – Pathakhera II UG : P_KP_2UA-3

(24 hourly values in µg/m³)

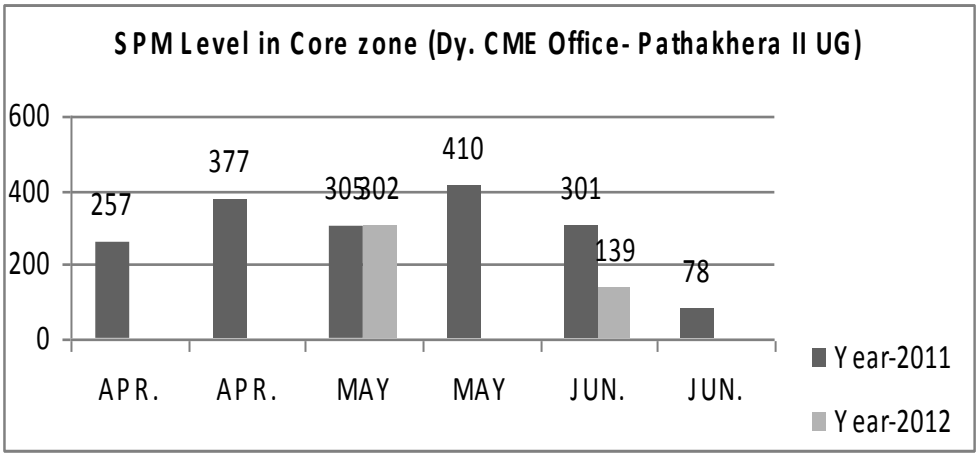
Month	Dates of Sampling			Parameters			
	From	-	To	SPM	PM-10	NO_X	SO_2
MAY. 2012	05.05.12	-	06.05.12	302	158	5	2
JUN. 2012	07.06.12	-	08.06.12	139	60	3	2
TLV as per Env.(Protection) Amendment Rule 2000				**600**	**300**	**120**	**120**

4. Pathakhera Colony : P_KP_2UA -4

(24 hourly values in µg/m³)

Month	Dates of Sampling			Parameters			
	From	-	To	SPM	PM-10	NO_X	SO_2

APR. 2012	05.04.12	-	06.04.12	184	87	5	2
APR. 2012	19.04.12	-	20.04.12	144	77	3	2
MAY. 2012	05.05.12	-	06.05.12	162	73	3	3
MAY. 2012	20.05.12	-	21.05.12	192	93	6	4
JUN. 2012	07.06.12	-	08.06.12	188	86	4	3
JUN. 2012	19.06.12	-	20.06.12	175	74	2	1
Permissible Limit				**200**	**100**	**80**	**80**



NOISE LEVEL DATA

NAME OF THE COMPANY : WCL YEAR : 2012
NAME OF THE AREA : PATHAKHEDA Q.E. : JUN.
NAME OF THE PROJECT : PATHAKHEDA-II UG

Name of the Location : Fan House - P_KP_2UN-1

Month	Date of Data collection	Noise Level in dB(A)		Remarks
		Day Time	Night Time	
APR. 2012	06.04.12	65.1	60.1	
Noise Level Standard as per Env. (Protection) Amendment rule 2000		**75**	**70**	

Name of the Location : Colony - P_KP_2UN-2

Month	Date of Data collection	Noise Level in dB(A)		Remarks
		Day Time	Night Time	
APR. 2012	06.04.12	50.7	40.9	
APR. 2012	19.04.12	52.3	41.5	
MAY. 2012	07.05.12	53.6	43.3	
MAY. 2012	19.05.12	49.3	40.7	
JUN. 2012	08.06.12	52.6	42.1	

JUN. 2012	18.06.12	51.2	41.7	
Permissible Limit		**55**	**45**	

3.3.2 Practice after the closure of the mine

a. As the sources of dust and fume generation would no longer be present, the present practice of arresting the air pollution, would no longer be required after the closure of the mine.

However, water sprinkling would be done on the roads, which remain in use after the mine closure.

b. Quality of air would be monitored for a period of 3 years after the cessation of mining activities. Efforts would be made to bring the air quality to the pre-mining standard.

3.4 Disposal of Building, Plants & Machineries

3.4.1 Infrastructure details

Presently, the project has following infrastructures details

a. CHP- There is no CHP at the mine but entire coal from this mine was being dispatched through CHP of Pathakhera - I mine to Satpura Thermal Power Station, Sarni.

b. Workshop- Size with major equipment

All the machineries & equipments shifted to the other unit of area as per competent approval and workshop building has been dismantled.

c. Railway Sidings

There is no railway siding.

d. Colony (number and type of quarters)

Pathakhera area having centralised residential colony quarters. Persons/employees have been transferred to other units and are continuing to reside in the same quarter

e. Water supply arrangement (source &facilities available like treatment plant and its capacity)

Water supply arrangement is catering to centralize residential colony.

f. Details of non-residential building-office building, Sub-station, winder house, haulage room, Boiler house, any other building

All surface infrastructure have been dismantled except substation building which is being used as a Chokidar shed for Gang Switch of 33KV Shobhapur and NCDC Power supply feeders (double source power supply) for Tawa mine.

3.4.2 Post closure disposal/re-use of the Building ,plants& Machineries

a. Disposal or reuse of existing CHP, Workshop, Haulage, Ventilation and railway siding for UG mines.

Most of equipment have completed its rated life, and the proposal for survey off & grounding of at specified place has been made and remaining equipment diverted to the other unit for gainful utilisation.

b. Disposal or reuse of transmission lines and sub- station

Transmission lines and sub- station have been dismantled and the usable items/spares/conductors etc. have been dispatched to needy projects.

Substation building which is being used as a Chokidar shed for Gang Switch of 33KV Shobhapur and NCDC Power supply feeders (double source power supply) for Tawa mine.

c. Disposal or reuse of residential and non-Residential buildings

Residential and non-Residential buildings building are being gainfully utilized by area for other mines.

3.5 Safety and security arrangement

Reserve has been exhausted, All the entries (inclines and air shaft) are sealed off for safety and minor cracks in the surface have been filled up properly.

3.6 Survey records of workings

All the survey records such as statutory plans of all seams, survey instrument field books, level book and permission letters etc. have been submitted to survey Officer of the area.

3.7 Disposal management of hazardous material

There is no hazardous material hence it is not applicable.

3.8 Re- deployment of work force

The manpower of mine is Nil (as on 1.06.2013).

3.9 Emancipation from the community facilities and the facilities to the PAPs.

No effect on the local community because Pathakhera Area have centrally located township.

3.10 Plantation Details

Sl.No	Financial Year	No. of Plants
1	2010-11	-
2	2009-10	-
3	2008-09	5000 nos.
4	2007-08	-
5	2006-07	-
6	2005-06	-
7	2004-05	-
8	2003-04	-
9	2002-03	--
10	2001-02	-

CHAPTER – IV

ECONOMIC REPURCUSSION OF CLOSURE OF MINE

4.1. Manpower of the project:-The current manpower of the mine is Nil (as on 1.06.2013)

4.2. Assessment of income scenario of local resident employee: -

(a) Local employees have already been redeployed in other projects of the company

(b) People engaged in indirect employment / ancillary activities will find no financial loss due to the mine closure as their activities will be shifted in the new or expansion mines or other mines located in the coalfield area. As such the direct and indirect manpower will not be affected due to mine closure.

(c) Resettlement / Redeployment of (a) & (b)

- Compensation for loosing employment or income.
- Vocational training for continuance / sustenance of income level :

Note: After the closure of the mine, the reclaimed leasehold area and any structure thereon, which is not to be utilized by the mine owner, shall be surrendered to the state Govt. Concerned following a laid down procedure as in vogue at that point of time.

CHAPTER – V
TIME SCHEDULING FOR ABANDONMENT

IMPLEMENTATION SCHEDULE FOR MINE CLOSURE (LIFE OF THE MINE: 0 YEARS)

Sl.No	Main Activities	Time Frame	YEARS
			PCI / PC2 / PC3
A	**Dismantling of structures**		
	Service buildings	2 years	
	Residential buildings	2 years & ½ years	
	Industrial structures like field sub-station etc.	2 years & ½ years	
B	**Subsidence Management**	3 years after cessation of mining operation	
C	**Landscaping**		
	Landscaping of the cleared land for improving its aesthetic	3 years after cessation of mining operation	
D	**Plantation**		
	Plantation over leasehold area and on other open spaces	3 years after cessation of mining operation	
E	**Post Closure Env. Monitoring/ testing of parameters for three years**	3 years	
F	**Miscellaneous and other mitigative measures**	3 years after cessation of mining operation	
G	**Post Closure Manpower cost for supervision**	3 years after mine closure	

PCI : Post Closure Year 1, PC2: Post Closure Year 2, PC3: Post Closure Year 3

CHAPTER – VI

MINE CLOSURE COST

6.1 The mine closure cost will cover the following activities for which a corpus fund will be created by opening an escrow account with the coal controller organization in nationalized bank. An amount @ 1.00 lakhs per Ha of the Project area will be deposited in this account for final mine closure.

6.1.1 Ref: Circular No. 55011-01-2009- CPAM, Government 0f India, Ministry of coal dated 27th August 2009 duly updated on 7th January 2013.

6.2 Type of Mine: Under Ground Mine **Project Area of the mine:** 281.387 Ha

The financial provision for closure of Patharkhera -II UGP Mine comes to around Rs. 354.99 lakhs (Based on April 2012 WPI) at the @ Rs 1 lakh/ Ha (Aug 2009 WPI basis) as per mine closure guidelines

Life of the Mine : NIL as on 01.04. 2012

6.3 Mine closure cost has been assessed based on existing conditions and is given below.

Sl. No	Activity	Amount (Rs in Lakhs)
A	**Dismantling of structures**	
	Residential Building + Unauthorized hutment (about1500 quarters and hutment)	75.00
	Sub station etc.	5.00
C.	**Subsidence Management.**	5.00
D.	**Landscaping**	
	Landscaping of the clear land for improving its aesthetic.	5.00
E.	**Plantation**	
	Plantation over the cleared area obtained after dismantling and on other open spaces.	50.00
F.	**Post Closure Env Monitoring / Testing of parameters for three years.**	12.00
H.	**Miscellaneous and other mitigative measures.**	10.00
I.	**Man power cost for supervision**	5.00
TOTAL		**167.00**

Note- 1. The amount indicated separately under each head is indicative only and based on actual expenditure the amount may change.

2. The above cost expenditure will be met from the corpus fund deposited in the escrow account by the mine operator. However, the additional amount (if needed) beyond the funds in escrow account will be provided by the mine operator.

6.4 Estimate of proposed escrow fund as per MCP guidelines.

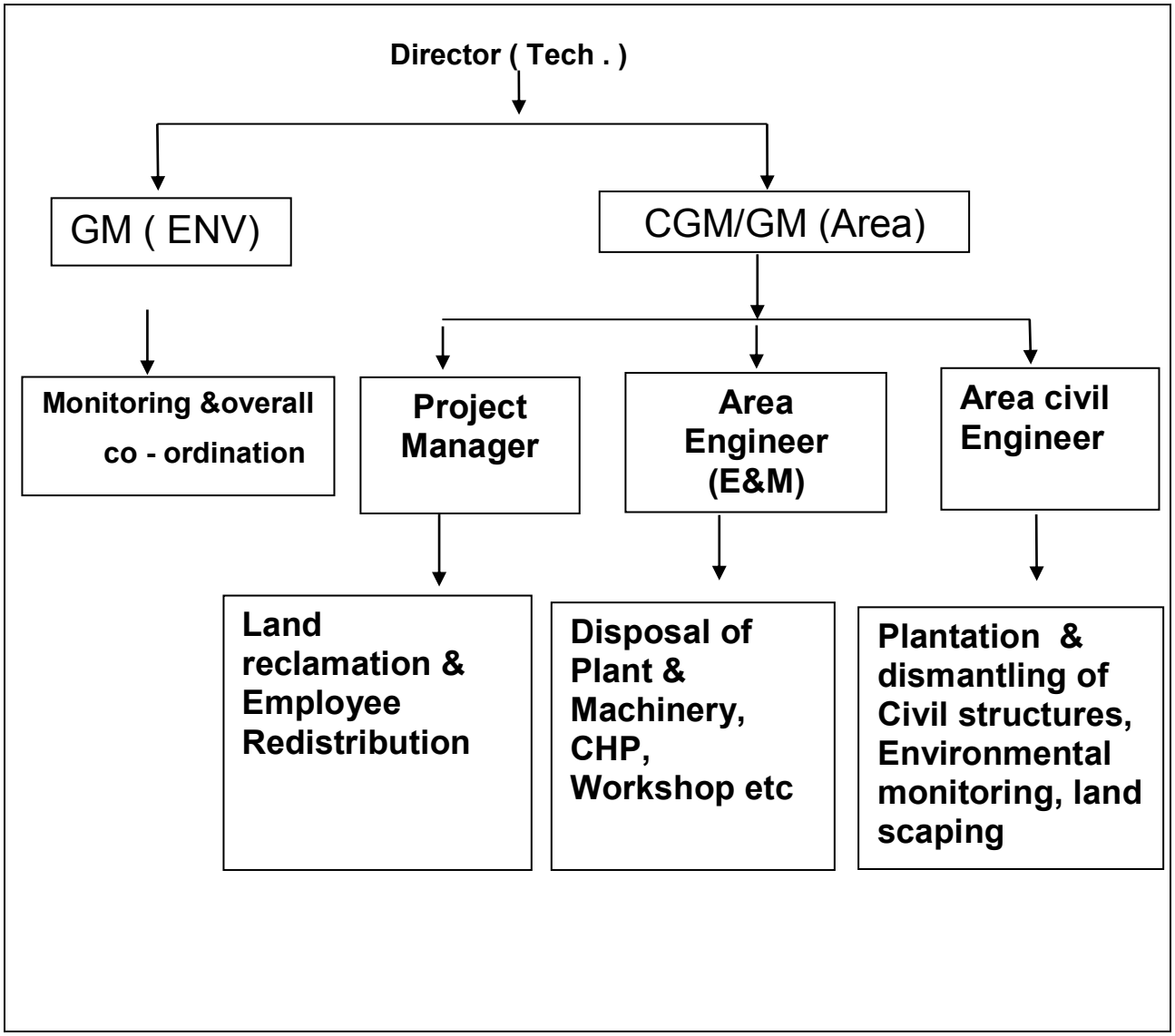
The total project area is 281.387 Ha. So the corpus based on August, 2009 rate is 281.387 Lakh @ 1.0 Lakh Rs/Ha of project Area. The wholesale price Index in August, 2009 is 129.6 and the WPI, for the month of April 2012 available in the website of Office of Economic Adviser, Ministry of Commerce, Government of India is 163.5. So the current value of corpus is Rs. 281.387 *163.5/129.6 Lakhs, which comes to Rs. 354.99 lakhs. This corpus is to be deposited in the escrow account.

S.NO.	FINANCIAL YEAR	AMOUNTS IN LAKHS
1	2012-13	354.99
	TOTAL	354.99

CHAPTER – VII

IMPLEMENTATION PROTOCOL

For implementing the mine closure activities, the following organizational structure has been proposed:



Environmental monitoring for three years after closure of mine will be carried out to evaluate the environmental quality of the area. If need be, proper mitigation measures will be taken up after evaluating the environmental quality. The funds for this have been provided in the cost estimate. Before closure of the mine, Area GM will prepare survey and disposal report and the same will be submitted to DGMS for acceptance.